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THE UNIVERSITY OF ALBERTA

THE EFFECT OF SHORT-TERM INTERVENTION PROCEDURES BY HEARING-AID PRACTITIONERS ON THE SELF-ESTEEM OF ADULTS WITH ACQUIRED HEARING LOSS

(C)

BY

HILDA MARIAN CAMPBELL

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

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IN

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DEPARTMENT OF EDUCATIONAL PSYCHOLOGY

EDMONTON, ALBERTA

FALL, 1987

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The undersigned certify that they have read, and recommended to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled THE EFFECT OF SHORT-TERM INTERVENTION PROCEDURES BY HEARING-AID PRACTITIONERS ON THE SELF-ESTEEM OF ADULTS WITH ACQUIRED HEARING LOSS submitted by Hilda Marian Campbell in partial fulfilment of the requirements for the degree of MASTER OF EDUCATION

Supervisor

Date August 18, 1987

ABSTRACT

Hearing loss acquired postlingually has been associated with a variety of psychological and psychosocial consequences. These consequences are bound to influence an individual's perception of his self-worth, but there is little empirical information currently available about a specific relationship between hearing loss and self-esteem in adults. It appears that the majority of adults with acquired hearing loss, who seek help for their hearing problem and eventually become experienced hearing-aid users, are able to minimize the consequences of their handicap and to cope in a near normal fashion. But, again there is little empirical evidence that relates short-term aural rehabilitation or hearing-aid use to improved self-esteem. The present study was designed to examine the relationship between self-esteem, hearing loss, and short-term aural rehabilitation/hearing-aid use as an initial intervention procedure. A three-group, pretest-posttest, institutional Cycle design was used with 60 adults between 18 and 77 years of age. Participants were selected from a hearing-aid dispensing facility in Edmonton, and were new hearing-aid users. The first 40 participants recruited simultaneously were designated as Group A, and subsequently assigned to Groups A1 and A2 alternately. The remaining 20 participants who were recruited later, were designated as Group B. Self-esteem measures were taken before and after a 30-day aural rehabilitation program, which included being fitted with personal amplification. These self-esteem measures were examined for statistical significance. The pretest means for the 40 participants in Groups A1 and B revealed that prior to treatment self-esteem scores decreased with the severity of hearing loss. When the

effectiveness of the short-term aural rehabilitation program was considered the posttest self-esteem scores of Group A1 reflected significant increments in self-esteem. However, significant changes were not found when the posttest scores of Groups A2 and B were compared to the pretest scores of Group A1, which may in part reflect the reduced power of the statistical test and small group size. Interrelated variables of age, employment, and extent of hearing-aid use were not found to be significant in this study, but, appear to be appropriate targets for further research.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

A sense of personal adequacy is a basic need of each individual (Combs and Snygg, 1959). This need expresses itself in many ways that are aimed at maintaining or enhancing one's perception of one's own worth (Coopersmith, 1967). Certain handicapping conditions still carry social stigmas (Goffman, 1963), and hearing loss is one of these (Garrison and Tesch, 1978). The importance of self-esteem is a well-recognized fact in psychological literature, and certain behaviors are attributed to positive and negative self-esteem. This study examined factors which were thought to contribute to lessening or enhancing self-esteem, namely hearing loss and aural rehabilitation.

This chapter will start by highlighting background information which identified the problem for this study. The purpose of the study will be discussed next, and the remaining sections of this chapter will deal with problems in carrying out the study, definition of terms, and a general overview.

1.2 Background to the Study--The Problem

A number of authors have examined the psychological and psychosocial consequences of adult hearing disorders with regards to socio/psychological disruption and occupational stability (Frankel, 1981; Giolas, 1982; Thomas, 1984; Vernon & Ottinger, 1980). However, there appears to be little empirical evidence directly related to the effect of acquired hearing loss on self-esteem, although a need for such investigations has been suggested. Thomas (1984) stated "it is essential that more effort should be expended in finding out what it means to live with a hearing loss acquired as an adult, and how it affects a

person's view of himself" (p. 165). Only two recent studies by McLaughlin (1980) and LeBlanc (1981) have investigated hearing-impairment and self-esteem, but these studies focussed on profoundly deaf students and neither reported on causality or treatment effects. Speculating on these results, Orlans (1985) suggests that self-esteem might be negatively related to acquired hearing loss under certain conditions.

Considering the prospect of improving self-esteem through intervention, Jerger (1984), Orlans (1985), and Wyede (1982) have indicated that important changes in the hearing health care professions have occurred, in the current and past decade, because of psychological and technological research. These authors note that there have been important advancements in the development of more effective equipment for use in diagnostic and rehabilitative services, and the professions associated with these services have expended much effort in addressing role definitions and training requirements. As a consequence of these improvements important studies have examined the handicapping effects of hearing impairment and how new technology such as sophisticated testing equipment and improved hearing-aids can treat these effects.

Traditionally, for adults with acquired hearing loss, the process of intervention has focussed on an audiometric evaluation, the fitting of and orientation to hearing-aids, and basic maintenance and counselling procedures during what is generally known as a 30-day trial period (Sanders, 1982). Researchers examining the effect of both short and long-term rehabilitation on hearing-impaired populations suggest a positive effect of aural rehabilitation procedures on self-esteem (Alpiner, 1982; Jerger, 1984; Sanders, 1982). Garstecki (1984) notes that these authors see successful hearing-aid use as the major component of all aural rehabilitation programs. Frankel (1981)

recommended that "intervention studies using clinical trials to manipulate variables should be undertaken" (p. 118), and Lutman and Haggard (1983) emphasized that researchers must endeavor to document more precisely the magnitude of the effects of hearing impairment on personal adjustment patterns with a view to making rehabilitation more relevant to individual needs.

Oyer et al. (1976), in discussing adults with acquired hearing loss, stated,

> ...it would appear that most of these people once they are fitted with appropriate amplification, see themselves as successful hearing aid users, able to cope with whatever psychological adjustments they require. In fact, few of them when they are approached, express any interest in aural rehabilitation programs or self-help groups...(p. 402).

The assumption made in this statement is that if self-esteem, or an individual's evaluation of his or her self-worth, is negatively related to hearing loss, then use of appropriate amplification, along with traditional short-term rehabilitative procedures, might have restorative effects.

As Orlans (1985) has summarized, researchers have expressed a need for empirical studies on the affective consequences of acquired hearing loss and the subsequent impact of treatment, commonly known as aural rehabilitation. The present study was designed to address these needs by considering the effects of adult hearing impairment on self-esteem, and the subsequent influence on self-esteem of short-term aural rehabilitation procedures that have been chiefly provided by licensed hearing-aid dealers/practitioners in Alberta (Vibrations, August 1986).

1.3 Purpose of the Study

The specific purposes of this study were (a) to clarify the relationship between acquired hearing loss and self-esteem, and (b) to investigate whether a short-term aural rehabilitation program was effective in improving self-esteem. Besides simple clarification of the relationship it was hoped that this study

would contribute empirical information about the relationship between acquired hearing loss, self-esteem, and rehabilitation as well as the effects of interrelated demographic variables like age, employment status, and motivation to wear personal amplification as manifested by hearing-aid use.

1.4 Methodological Problems

Thomas (1984) suggested that sample selection for research purposes is hampered because individual differences among hearing impaired adults appear to be so extensive that they are difficult to encompass when designing a study. Researchers acknowledge that theoretical orientations, general philosophy, and personal interests, will affect how a population may be identified (Giolas, 1982), and Orlans, (1985) states that definitions may be used interchangeably, thus making comparisons difficult.

If there is a lack of agreement in the selection criteria for a representative sample, defining what constitutes a typical short-term aural rehabilitation program is even more controversial (Orlans, 1985; Thomas, 1984). No official information could be found to ascertain the extent of overlapping in the roles of audiologists and hearing-aid dealers now practicing in the field. Numbers alone seem to indicate that in North America, in general, and in Alberta, in particular, hearing-aid dealers are still looked upon as the traditional dispensers of aural intervention services. The Alberta Hearing-Aid Audiologist Association, formed in 1970, has 75 members who are licensed hearing-aid dealers operating under a provincial government sponsored dispensing program, while only five clinical audiologists in private practice have similar agreements with the Alberta Ministry of Social Services and Community Health. Despite the program's guidelines, services provided under these agreements vary. Alpiner (1982) and Sanders (1981) indicated that various

researchers in rehabilitative audiology are currently discussing what knowledge and skills are necessary to provide competent service. Jerger (1984) suggested that researchers seem to agree that although many excellent programs involving the management of adult hearing loss do exist, there is a distinct lack of uniformity and consistency.

Alpiner (1982) suggested that one of the weakest areas in adult hearing rehabilitation is the lack of sophisticated research methodologies. Nett, Doefler and Matthews (1960), who directed a study toward determining psychological, vocational and social handicapping among adult individuals with acquired hearing loss, have now had their claims refuted because nearly half of the subjects appear to have had normal or very near normal hearing. Myklebust (1964) has also been criticized for the misclassification of hearing-impaired persons which resulted in misleading interpretation. And Giolas (1982) warned that the use of audiometric data alone in defining hearing impairment can produce misleading conclusions. Thus, Oyer's et al. (1976) position that little confidence can be placed in contradictory findings based on ill-defined samples and unclear concepts in aural rehabilitation practices, is still applicable. Clearly, it is important that researchers dealing with hearing loss and intervention procedures must accurately define the characteristics of their sample and consider their individual differences.

Thomas (1984) indicated that obtaining a relatively representative sample of hearing-impaired adults can be very costly, extremely time-consuming, and difficult. Jerger (1984) noted that the ethical considerations of administering or withholding treatment and the surmounting of individual differences when matching subjects make the use of experimental groups

difficult. Awareness of these considerations influenced the author's selection of a quasi-experimental Institutional Cycle design for this study (Campbell and Stanley, 1966).

1.5 Definition of Terms

The following section provides the definitions of the terms used in this investigation.

Self-Esteem. In this study self-esteem refers to the evaluative component of self-concept, as measured by the Battle (1981) Culture-Free Self-Esteem Inventory for Adults (Culture-Free SEI). In this case self-esteem is described as the perception one has of one's own worth (Coopersmith, 1967).

Self-Concept. Self-concept is the integrated pattern of an individual's experience of which self-esteem is a major factor (Smith, 1960).

Adult. In this study an adult is a person, male or female, who is 18 years of age or older.

Acquired Hearing Loss. An acquired hearing loss is one that occurs after the normal acquisition of language and speech, for which thresholds may vary from mild to profound, and which develops either suddenly or gradually (Ramsdell, 1978). Neither age of onset nor severity of loss were criteria for eligibility to participate in this study, but in every case the loss needed to be of sufficient magnitude to affect the subject's daily living.

Hearing-Aid Use. Hearing-aid use refers to personal amplification, either one or two units, as prescribed and fitted by licensed hearing-aid practitioners, and used daily for time periods ranging from one hour up to twelve hours or more, for the traditional 30-day trial period required by provincial regulations (Agreement between the Ministry of

Social Services and Community Health and the Alberta Hearing-Aid Audiologist Association, April 1, 1986).

New Hearing Aid Users. Only those persons who, during their initial audiological assessment at a hearing-aid centre in Edmonton, identified themselves as having had no previous experience with hearing-aid use, were included in this study. Eligibility to participate in the investigation was based chiefly on this status as first-time hearing-aid users, as well as stated intentions to become permanent hearing-aid users following the 30-day trial period. Those who dropped out of the short-term aural rehabilitation program were excluded from the data because it was impossible to maintain further contact with them, although an investigation of how they may have differed from those who remained in the program could possibly have provided important data.

Licensed Hearing-Aid Practitioners. The licensed hearing-aid practitioners are aural rehabilitationists with Alberta certification qualifying them to perform audiometric tests, select and fit hearing-aids, and offer maintenance and counselling services in accordance with the requirements of the Alberta Ministry of Social Services and Community Health. The five practitioners in this study are staff members at a large dispensing facility that has been serving Edmonton and vicinity for 40 years.

Short-Term Aural Rehabilitation or Initial Intervention Procedures. For the purposes of this study the short-term aural rehabilitation program included: (a) audiometric testing and observation to determine the extent of functional hearing loss, (b) selection and fitting of an

appropriate hearing-aid (or aids) to compensate most effectively for the hearing loss, (c) performance of efficiency tests, minor repairs, adjustments, and maintenance as needed, (d) provision of counselling to meet individual needs, including instruction in the care and use of hearing-aids, (e) referral of clients to physicians when necessary, and (f) familiarization of subjects with hearing-related services such as speech-reading classes and self-help groups.

Treatment Period. The treatment period for this study commenced with the fitting of personal amplification and included items (c) to (f) of the short-term aural rehabilitation program previously described. The treatment period continued for a minimum period of 30 days. Only those subjects who retained their hearing-aids and intended to continue using them were included in the study. Others were treated as lost cases. Due to the mobility and personal schedules of the subjects, the 30-day time span could not be adhered to rigidly, but in no case was the treatment period less than 30 days. The maximum treatment period was 62 days.

1.6 Summary and Overview

This chapter has introduced the problem and placed it in context with general background information. The purpose of this study, the definitions of terms and methodological problems were also identified.

Chapter 2 will review the research literature related to self-esteem, acquired hearing loss, and hearing-aid use which is a major component of the short-term aural rehabilitation program. The integration of this information will be used to pose the research questions. The third chapter will describe the participants, the research design, the instruments and the procedures for data collection. Assumptions upon which the study was carried out will also be

delineated. Chapter 4 will present the results of the study. And the final chapter will discuss the findings, conclusions, implications, limitations, and suggestions for further research.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction and Overview

Coopersmith (1967) indicated that "self" as a psychological construct, has been described by, and evolved with the discipline of psychology over the past century. In the literature, hearing loss has been reported by various researchers to be associated with psychological and psychosocial consequences (Frankel, 1981). Within the last two decades, the discipline of audiology has given increased recognition to the positive effects of aural rehabilitation procedures, in general, and hearing-aid use in particular (Alpiner, 1982). This literature review focusses explicitly on the consequences of hearing loss acquired in adult life, how these factors affect individual self-esteem, and the influence of current solutions to the problem.

The literature review related to self-esteem will be presented first, describing its positive and negative aspects and its relationship to self-concept. Also included is a review of the social implications of changes in self-esteem, as well as views on the problems of measurement. The second section is devoted to a survey of the research on acquired hearing loss and interrelated variables. The roles of rehabilitationists will be discussed from the standpoint of hearing-aid use as the basis of aural rehabilitation procedures. The final section will integrate the information on acquired hearing loss and hearing-aid use as the major component of rehabilitation procedures, and show how these variables influence self-esteem. The research questions will then be drawn from the integration of this information.

2.2 Self-Esteem and Self-Concept

To discuss self-esteem, the relationship to self-concept, positive and negative attributes, implications for changes, and ways it may be measured, there is value in examining the definitions of self-esteem and self-concept that the literature offers to clarify the characteristics of each.

As early as 1902, Cooley noted that self-esteem is dependent upon aspirations, values and successes in comparison with what others think of the individual. However, James (1918) was the first to discuss self-esteem as "one's actual success or failure, and the good or bad position one actually holds in the world" (p. 30). Five decades later, Coopersmith (1967) expanded James' description to the one which is still most commonly used by researchers today:

> Self-esteem is the evaluation which an individual makes and customarily maintains with regard to himself; it expresses an attitude of approval or disapproval, and indicates the extent to which an individual believes himself to be capable, significant, successful, and worthy. It is subjective experience which the individual conveys to others by verbal reports and other overt expressive behavior (p. 4-5).

Levita (1965) referred to self-esteem as the end result of self-evaluation, and accordingly stated that "it depends on the nature of the inner image against which we measure our own self" (p. 81). In an earlier study, Combs (1962) described self-esteem as an ongoing process in which "continuous learning experiences influence the portraits of self that are accumulating and emerging at the same time" (p. 54). Diggory (1966) defined self-esteem as "a feeling of competence" (p. 14), and Felker (1974) saw it as "an individual's evaluation of himself which functions as an umbrella over all his everyday behavior" (p. 23). Battle (1981), who designed the Culture-Free Self-Esteem Inventory for Adults (Culture-Free SEI), referred to self-esteem as "the valuational perception the individual has of his own worth" (p. 16).

Although defintions of self-esteem are many and varied, they do appear to have in common the individual's perception of his or her own worth, or the evaluations which an individual customarily makes of himself or herself, as defined by Coopersmith (1967).

2.2.1 Self-Esteem as a Component of Self-Concept

Closely related to Coopersmith's (1967) definition is the view that self-esteem is one component in the larger composite of self-concept. Smith (1960) described five dimensions of self-concept: (a) self-esteem, (b) anxiety-tension, (c) independence, (d) estrangement, and (e) body image. The first factor, self-esteem, was seen as "a broad dimension weighted at the positive pole by success and satisfaction with life's affairs" (p. 191). Smith also noted that self-esteem is the component of self-concept which is inextricably linked to the social context, and may therefore change.

Berger (1968), like Smith (1960), observed that self-esteem is not a one dimensional variable, but is related to a number of independent dimensions encompassed within the larger domain of self-concept. Cohen (1959), Diggory (1966), Felker (1974), Maslow (1973), Mischel (1977) and Wiggins (1973) have reiterated the view that self-concept generally refers to the global constructs of personality and the gestalt of all experience, while self-esteem is seen as a dimension of, and the evaluational component of self-concept. Shavelson, Hubner and Stanton (1976) noted that "the terms self-concept and self-esteem have been used interchangeably in the literature" (p. 415), however, this study employs self-esteem, not as interchangeable with self-concept, but as an evaluational component of self-concept.

2.2.2 Positive and Negative Self-Esteem

The relationship between an individual's behavior and positive or negative self-esteem has been considered and discussed numerous times. Many researchers (Hamachek, (1978); Rosenberg, (1965) and Wylie (1974)) have agreed with Coopersmith's (1959) premise that "individuals who differ in self-esteem behave in markedly different ways" (p. 119). In earlier works, Combs and Snygg (1959), Janis (1954) and Rogers (1951) agreed that persons with low-self-esteem are less capable of resisting pressures to conform than are those with positive feelings about their self-worth. Similarly, Cohen (1959) observed that people with high self-esteem tended to protect themselves against negative self-evaluations and were more able to "maintain a fairly constant image of their capabilities and distinctiveness as persons" (p. 9).

Coopersmith (1967) defined a number of attributes said to be characteristic of high and low self-esteem. At the positive end of the spectrum were leadership, independence, popularity, pride, confidence, and lack of self-consciousness, while negative attributes included self-doubt, uncertainty, suspicion, and lack of social interaction" (pp. 161-164). Avila, Combs and Purkey (1971) expanded Coopersmith's (1967) statement by observing that "self-actualized people are more effective in meeting environmental demands than persons with low self-esteem, and they see themselves in such positive ways as liked, wanted, acceptable, able, dignified, and worthy" (pp. 399-400).

Designers of measuring instruments for self-esteem generally base test and subtest items on adjectives indentified in the research literature as applicable to either positive or negative self-esteem (Brim & Kagan, 1980). Hence, while authors may differ slightly in their use of descriptive adjectives,

research evidence points to the fact that contrasts do exist between high and low self-esteem and that these contrasts are measurable through self-report instruments (Atwater, 1983).

2.2.3 Social Implications of Changes in Self-Esteem

Coopersmith's (1967) statement about self-esteem being dependent upon aspirations, values and successes in comparison with what others think of us has been corroborated by a number of researchers (Atwater, 1983; Brim & Kagan, 1980; Hamachek, 1978; Zurcher, 1977). The influence that the group or society has on individual self-esteem was also noted by Maslow (1973) and Murphy (1947) who both observed that interpersonal experiences and human interaction were major forces in the development of either positive or negative views of oneself. Mischel (1977) claimed that self-esteem is "changeable within the context of social environment and freely dependent upon it for its strength" (p. 146).

Thus, it appears that the development of either positive or negative self-esteem is not accomplished in isolation, but is the ongoing evaluation an individual makes of himself or herself in social interactions with others. The examination of factors which might be associated with either positive or negative self-esteem forms the central focus of this study.

2.2.4 Measuring Self-Esteem

One reason for the lack of research examining a direct relationship between self-esteem and acquired hearing loss lies with the difficulty of measuring psychological traits with precision. The common use of self-report instruments has been criticized by a number of authors. Garrison and Tesch (1978) indicated:

> Although experiences associated with hearing loss have been predicted by various theoretical perspectives to have negative effects on personality, attempts to measure such effects have employed different self-report scales and produced inconsistent findings (p. 368).

Sullivan and Vernon (1979), also critical of self-report methods, noted that the impact of hearing loss on an individual cannot be measured in isolation and "at the present time, the state of the self-report assessment art is inexact" (p. 280). Thus, they felt that measurement of self-esteem must be done within the context of complex social variables within the hearing-impaired individual's environment.

In response to the critics of self-reporting as a valid method of addressing self-esteem, Diggory (1966) and Felker (1974) maintained that if self-report instruments were not used, there would be no way of knowing whether self-esteem existed, and subsequently, it could not be measured. This position has been supported by Shavelson, Hubner and Stanton (1976) who stated that "self-concept is restricted to an individual's report of self" (p. 411).

Earlier studies by Combs and Snygg (1959) and Combs (1962) supported the view that an individual reports about himself from an internal frame of reference which provides the most accurate point from which to understand individual behavior. Combs noted that although there may be a discrepancy between what an individual believes about his self-worth and what he says in self-report, what the person says will likely be significantly affected by what he is.

Maslow (1973) reported that human judgement is the most widely used assessment technique, although behavior of the human organism may be influenced by many variables in addition to the one a test is designed to measure. Maslow pointed out that "attention, motivation, state of health,

fatigue, distraction and emotional status all affect test results" (p. 43). Thus, the researcher can control certain influencing variables while using a self-report instrument to measure self-esteem, but others remain beyond the control of science.

A survey of the research literature indicates that despite the difficulty of measuring self-esteem with precision, and the lack of certainty as to the adequacy or appropriateness of the instruments available, it is likely that the individual himself is the most reliable source of information about his own feelings and behavior. Zurcher (1977) stated that "only the individual himself is capable of observing and evaluating his inner life and thought (p. 367). The implications of this statement influenced the selection of the instrument used to measure self-esteem in the present study.

2.3 Acquired Hearing Loss and Self-Esteem

A survey of the literature indicates that while acquired hearing loss is relatively common, there are few autobiographical accounts of its adverse effects on personal well-being or on a person's perceptions of self-worth. Evidence from a number of researchers, however, attests to their agreement that the consequences of hearing impairment differ greatly depending upon the degree, rapidity, age at onset, and type of hearing loss (Lutman & Haggard, 1983). It becomes apparent that organic, psychological, and environmental factors all play roles which differ from person to person (Giolas, 1982).

Acquired hearing loss is one in which the onset occurs postlingually--after the normal acquisition of language and speech. The consequences of a postlingual hearing loss differ drastically from those resulting from a prelingual impairment. Markides, Brooks, Hart & Stephens (1979) made the distinction between the two groups by stating:

> Those suffering from a profound prelingual deafness suffer a sensory deficit; those deafened in adulthood suffer a sensory deprivation. The problem of the one is developmental, and of the other traumatic. They cannot be equated (p. 120).

Oyer et al. (1976) noted that most authors generally agree that the consequences of acquired hearing loss may differ greatly depending upon such factors as age at onset, type of loss, severity of loss and whether onset was sudden or gradual. Clearly, adults with a hearing loss are not a homogeneous group and like Oyer et al. most authors imply that the extent of functional loss is influenced by an individual's personality as well as other factors.

The effects of age at onset of hearing loss have been described by a number of researchers (Alpiner, 1982; Chermak, 1981; Davis & Silverman, 1982; Giolas, 1982; Sanders, 1982; Wyede, 1982). All agreed with the findings of Thomas and Herbst (1980) who stated that:

> Attitudes to a disorder first suffered at a stage in life when it is felt to be untimely are different from the responses to the same disorder encountered at an age where it is conventionally expected as a part of normal aging, and has indeed become a norm (p. 29).

It can be understood that a hearing loss suffered at the age of 18, before the person's goals in life are achieved, will have very different consequences than a similar loss acquired in mid-life or during one's retirement years.

Degree or severity of hearing loss has also been described in a number of studies and several researchers have attempted to validate hearing scales designed to assess the extent of the hearing loss and its effects upon communication function and social interaction (Alpiner, 1982; Giolas, 1982; Schein, 1984). Schwartz (1985) stated that "the degree of loss of functional hearing has a great effect on an individual's ability to adjust to that loss" (p. 62). Orlans (1985) noted that many studies have disregarded this point and have included subjects whose hearing is well within the normal range. All of the

researchers agreed that hearing loss should not be measured by audiometric tests alone, but should be supplemented by self-reports and assessments by interviewers to determine the extent of functional loss as well (Thomas & Herbst, 1980). This premise is reflected in the defintions used in the present study.

Consequences of hearing loss are also influenced by the gradualness or rapidity of onset (Giolas, 1982; Jerger, 1984; Martin, 1981; Orlans, 1985; Sanders, 1982; Thomas, 1984). These authors subscribe to the view that hearing loss which is sudden or traumatic often results in a grief response. Conversely, if the disorder develops gradually over a long period of time, it can be stressful and anxiety-filled. Gradualness or rapidity of loss should obviously merit careful consideration among the constellation of interrelated variables affecting adjustment to hearing loss.

The research literature seems to indicate that the population with hearing loss acquired in adult life is composed of important subgroups based on a set of interrelated variables, namely: age of onset, degree of loss, and rapidity of loss. How an individual perceives himself in relation to these variables in his daily activities is of primary interest to the present study.

2.3.1 Hearing-Aid Use

The research literature indicates that most authors view optimal use of personal amplification, or successful hearing-aid use, as the major thrust of effective aural rehabilitation programs (Alpiner, 1982; Jerger, 1984; Orlans, 1985; Thomas, 1984). No empirical information could be found as to the general effectiveness of hearing-aid use, but the concept implies certain critical elements for discussion.

Determining the prognosis for effective hearing-aid use was seen as a vital component of intervention procedures by a number of authors (Garstecki, 1984; Giolas, 1982; Jerger, 1984). Factors crucial to successful personal amplification have been identified by Orlans (1985); they include lifestyle, degree of handicap, communicative needs, personality, physical and mental problems, age, and motivation. Markides, Brooks, Hart and Stephens (1979) recognized that the potential for successful hearing-aid use decreases in direct relation to increased severity of hearing loss.

The limitations of the present study did not permit encompassing all the factors listed in the literature, but age, employment status, severity of hearing loss, and motivation, as indicated by self-reported hours of daily hearing-aid use, were seen as possible influences on self-esteem measures.

While it is an obvious assumption that individual adjustment is crucial to the success of personal amplification, few data are available to support this view (Frankel, 1981). There is an apparent need for more empirical evidence of factors related to successful hearing-aid use, but this was beyond the scope of the present study. Hence, those subjects who were unable to adjust to hearing-aid use during the treatment period were excluded from the data.

2.3.2 Intervention Procedures: Role of Rehabilitationists

A review of the literature by Harless and McConnell (1979) concluded that satisfactorily meeting the needs of adults with acquired hearing loss might be more complex than had once been supposed, requiring specific knowledge and sophisticated professional training. Nevertheless, training programs for audiologists, counsellors, and hearing-aid practitioners still vary widely and their roles remain poorly defined.

Chermak (1979) saw the role of the hearing health care professional as one in which "the client is helped to a better understanding and acceptance of the problems created by a hearing loss" (p. 27). Hutton (1980) stated that the professional's responsibility is to "guide the client toward a constructive approach to self-management of hearing problems" (p. 16).

Garstecki (1984), Walden, Demorest and Hepler (1984), and Wang (1981) agreed that the rehabilitationist's methodology should include the use of hearing problem inventories, hearing handicap scales, audiometric data, predictive scales for successful amplification, communication training, and counselling in order to produce satisfied hearing-aid users. Alpiner (1982) pointed out that there is no "correct" approach, but that knowledge and flexibility are essential in planning effective intervention procedures. The aural rehabilitation procedures used by the hearing-aid practitioners in the present study included the use of a hearing problem inventory, evaluation of communication function, audiometric data, and individual counselling.

It appears that to date, the research literature has focussed entirely on the role of the professionally trained audiologist in delineating strategies for optimum hearing loss management. Scant mention has been made of the effectiveness of strategies employed by hearing-aid practitioners who currently appear to be dispensing the majority of hearing-related services. It is this gap in the research that, in part, influenced the research questions for this present study.

2.4 Integration

Differences in self-rated self-esteem measures among groups whose behavior is different from the norms have been noted throughout psychological literature (Avila, Combs, & Purkey, 1971; Maslow, 1973; Pintner, Fusfeld,

& Brunschweig; 1937; Rubin & Yust, 1983; Silverman, Thurlow, Walsh, & Davis, 1948; Veroff, Douvan, & Kulka, 1981; Welles, 1932). Although societal attitudes towards handicapped people have changed considerably in recent years, there remain certain handicapping conditions which continue to carry negative social connotations (Goffman, 1963; Mischel, 1977; Thomas, 1984). Hearing loss is among them.

An adult's acquired hearing loss has far-reaching psychological and psychosocial consequences if it is severe enough to interfere with normal communication (Ramsdell, 1978; Rousey, 1971). Familial and societal attitudes toward imperfect communication efficiency may have negative effects on one's self-concept (Myklebust, 1964). Seeking and achieving a satisfactory solution to the problem may in turn have positive consequences (Brooks & Johnson, 1981).

Since the literature generally endorses self-report as an appropriate self-esteem assessment technique, the use of a self-report instrument to measure differences in self-esteem before and after short-term aural rehabilitation procedures was deemed justifiable.

Significant psychological reactions to hearing loss acquired in adult years have been reported in several studies (Binnie, 1976; Brooks & Johnson, 1981; Frankel, 1981; Giolas, 1982; Jerger, 1984). The literature revealed no documentation of the effects of successful hearing-aid use on the self-esteem of hearing impaired adults, although the majority of hearing-aid users appear to be reasonably well-adjusted individuals. One might therefore hypothesize a positive effect on self-esteem of effective personal amplification in adults with acquired hearing loss.

The literature review identifies a need to expand our understanding of the effects of acquired hearing loss on self-esteem, by trying to identify the

variables which might influence self-esteem measures in adults with acquired hearing loss. Furthermore, the review implies that a relationship might exist among the variables of acquired hearing loss, successful hearing-aid use, and self-esteem (Chermak, 1981; Harless & McConnell, 1979; Walden, Demorest, & Helper, 1984). This implied relationship led to the hypothesis that--if acquired hearing loss has a negative effect on an adult's self-esteem, successful hearing-aid use as a major component of aural rehabilitation might have a positive effect. Therefore the aim of this investigation was to determine whether or not there was a difference in self-esteem measures in adults with acquired hearing loss before and after short-term aural rehabilitation procedures of which hearing-aid use is a major component.

2.5 The Research Questions

1. Do adults with acquired hearing losses have lowered self-esteem as measured by the Culture-Free SEI?
2. Do the hearing impaired participants who have completed the 30 day, short-term aural rehabilitation show improved scores on measures of self-esteem?

CHAPTER 3

METHOD

3.1 Introduction

This chapter will deal with the method and design of this study. First the participants will be discussed under the headings of Recruitment, Assignment to Groups, and Related Problems. Then the actual research design will be discussed. Following the research design a description of the instruments and the procedures used to collect data will be outlined. The final topic will be a brief discussion of the assumptions which were made in order to conduct the study.

3.2 The Participants

The study consisted of 60 adults between the ages of 18 and 77. Information on how the participants were recruited, allocated to groups, and the specific characteristics of the participants will be discussed in the following sections.

3.2.1 Sample Recruitment

The participants for this study were drawn from clients who attend a large hearing-aid dispensing facility, located in the City of Edmonton. Potential new hearing-aid users, who met the eligibility criteria for the study, were identified by five licensed hearing-aid practitioners who dispense aural intervention services at the Centre. Eligibility was based on the following criteria: (a) The subjects were 18 years of age or older, (b) the subjects had clinically significant hearing loss as asssessed by the practitioner, (c) the subjects were deemed to be suitable candidates for hearing-aid use, (d) the

subjects identified themselves as having had no prior experience with hearing-aids, and (e) they agreed to participate in a 30-day short-term aural rehabilitation program, commonly referred to as a "trial period" which included personal amplification as prescribed by the practitioner.

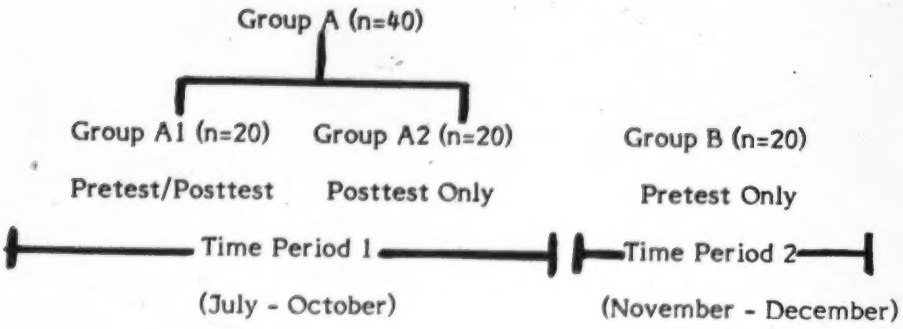
Following their identification, by the hearing-aid practitioners, a total of 73 potential subjects were given letters asking for their voluntary participation in the study (copies of Information and Consent letters located in Appendix p. 63). Willingness to participate was assumed if clients signed the consent statement and indicated they were first-time hearing-aid users. A total of 60 people agreed to participate and were then contacted by the author, although five of these subsequently dropped out of the aural rehabilitation program and were replaced by five others for this study.

3.2.2 Research Groups

The total number of participants included in the study was 60. The first 40 participants were recruited between July 7 and October 31, 1986. These participants were designated as Group A. The remaining 20 participants, designated as Group B, were recruited between November 1 and December 23, 1986.

The participants in Group A were subsequently assigned to Groups A1 and A2 in an alternating fashion based on the order in which they arrived at the hearing-aid clinic. Figure 1. illustrates the size and organization of groups used in this study.

Figure 1. Size and Arrangement of Groups



Group A1 completed the Culture-Free SEI on the day of their hearing-aid fitting and then again at the end of the short-term aural rehabilitation program, which was approximately 30 days later. The length of the treatment period varied according to the schedules of the participants (range of 30 to 62 days). Group A2, the Posttest Only Group, completed the Culture-Free SEI at the end of the short-term aural rehabilitation program, which again occurred 30 days after the hearing-aid fitting. Group B, a Pretest Only Group, completed the Culture-Free SEI on the day of the hearing-aid fitting.

All the participants received the short-term aural rehabilitation treatment. The 40 participants in Groups A1 and A2 received an identical treatment within the same general period of time. The participants in Group B would have had the opportunity to receive the short-term aural rehabilitation treatment after the initial hearing-aid fitting, but no further contact was kept, so the number of Group B participants who eventually withdrew from the rehabilitation program is unknown.

3.2.3 Recruitment and Related Problems

It is recognized that a number of conditions might have existed in the recruitment procedures for this study which make generalizing the results difficult. This study did not include those persons who go to audiologists, hospital clinics, and physicians for hearing related services. These individuals may or may not be similar to the population who use hearing-aid practitioners for rehabilitative intervention, but no information was available to assess the effect of their exclusion. It is possible that clients who seek help from otologists and hospital clinics have more serious hearing problems and might consequently have lower self-esteem.

The largest potential problem, however, lies in the exclusion of those individuals in the population who have sought no assistance for their hearing problems. It is possible that this may constitute a very different group from the participants included in this tudy. Again, the effect of their exclusion could not be measured nor could the influence of a possible Hawthorne effect be controlled. However, if most of this group had mild or moderate hearing losses, their self-esteem means might be closer to the norm, thus affecting the results significantly.

It also appears that a very small percentage of the target population might fall into the category of complete, or nearly complete deafness acquired in adulthood. There was no intention of excluding these persons, but by chance this study did not happen to include anyone from this category. Only through a very large-scale investigation could such a small population be adequately sampled and studied. The effect of excluding them might be signficant because this group is obviously very different from the participants of this study.

Finally, the lost cases might have affected the results. Five subjects returned their hearing-aids and withdrew from the study before the end of the 30-day, short-term aural rehabilitation program. Two subjects were from Group A1 and three were from Group A2. As noted earlier no record was kept of the participants in Group B after they completed the Culture-Free SEI, so the occurrence of lost cases in this group is unknown. All five participants who withdrew from the study were males, fitted with one hearing-aid, between 35 and 65 years of age and employed full time. These five participants were replaced by 3 males and 2 females, all of whom were retired and over 65 years of age, with the exception of one male and one female who were between 35 and 65 years. The participants' reasons for withdrawing varied, but all found adjustment to the hearing-aid to be difficult in noisy work environments. It was not possible to determine whether or not other substantial differences existed between the rest of the participants and the five who withdrew because further contact with the lost cases was prohibitive due to their personal schedules.

3.3 Research Design

Because it was impossible to conduct a true experiment in which some subjects would be denied treatment, a quasi-experimental research strategy was adopted. The design chosen most closely approximated what Campbell and Stanley (1966) refer to as an "Institutional Cycle" design (p. 57). Figure 2. illustrates the Institutional Cycle Design and how it applies to this present study.

Figure 2. Research Design for the Effect of Short-Term Intervention Procedures by Hearing-Aid Practitioners on the Self-Esteem of Adults with Acquired Hearing Loss.

		Time Period (June - October)			Time Period 2 (November - December)	
Group		Pretest	Treatment	Posttest	Pretest	Treatment
Group A1	R	O_1	X	O_2		
Group A2	R		X	O_3		
Group B					O_4	X

To determine whether the short-term aural rehabilitation program was having an effect on self-esteem the following comparisons were made...O_2 versus O_1, O_3 versus O_1, and O_3 versus O_4. If the treatment was working it was anticipated that $O_2 > O_1$, $O_3 > O_1$, and $O_3 > O_4$. To examine the possibility of pretest sensitization and initial group differences the following additional comparisons were selected...O_2 versus O_3 and O_1 versus O_4. If no significant differences were found the certainty of the treatment effect would be strengthened.

3.4 Instruments

For this study a formal standardized instrument was used to measure self-esteem. The information about the status of hearing was obtained from the hearing-aid practitioners, and the demographic data was collected using researcher-designed instruments. These sources of data were necessary so that the relationship between acquired hearing loss and self-esteem could be

illustrated, and then the effects of the short-term aural rehabilitation and other interrelated variables could be considered.

3.4.1 Self-Esteem Instrument

The Culture-Free Self-Esteem Inventory for Adults (Culture-Free SEI) by Battle (1981) was used in this study to measure self-esteem. The instrument was standardized on a group of male and female university students. Battle indicates that the Culture-Free SEI "has been used effectively with adults over a wide age range, to identify individuals who are generally dissatisfied with themselves" (p. 8). A copy of the instrument has been included in the Appendix (p.65).

The Culture-Free SEI is a self-report form containing 40 items; 16 general, 8 social, 8 personal, and 8 lie items. The items are self-descriptive statements such as "I am happy most of the time" and the subject chooses either a "yes" or "no" response. The self-esteem score is the total number of items checked that indicate high self-esteem. Norm Tables are provided in the manual for classifying total and subscale scores into the categories of; very high, high, intermediate, low and very low, but these categories were not used in this study. Furthermore, the 8 lie items were not included in the total and subscale scores because no clinical use was being made of the data for treatment purposes.

3.4.1 Data on Reliability and Validity of the Culture-Free SEI

Battle (1981) reported an overall test-retest reliability coefficient of r =.81 over a 48-hour period with a sample of 127 university students, r = .79 for males, and r=.82 for females. Factor analyses by Battle indicated that all of the scales have alphas in excess of r = .60, which is considered an acceptable

level of reliability. Thus, it appears that these scales can be considered internally consistent.

Battle (1981) also attempted to build content validity into the scales by developing a construct definition of self-esteem, and writing items intended to cover all areas of the construct. The construct definition states that self-esteem refers to "the perception an individual possesses of his own worth, which develops gradually and becomes more differentiated as he interacts with others (p. 14).

Wylie (1974) noted that "although diagnosticians generally agree that self-esteem is the most important variable affecting behavior, they rarely assess the self-esteem of their clients because they have typically been unable to find an instrument that is brief, valid, reliable and sensitive to change" (p. 24). Battle (1981) claims the Culture-Free SEI meets these criteria.

On the basis of the above information, the Culture-Free SEI was assumed to be valid and reliable. Furthermore, the instrument was felt to be suitable for the participants in this study because of the simplicity of the format and the informality of the language used in its statements.

3.4.2 Assessment of Hearing

Data on the status of hearing was provided by the hearing-aid practitioners from their records. The actual degree of impairment was measurable through audiometric tests, but the degree of handicap was determined by considering factors suggested by Giolas (1982). Thus, summary ratings were used to represent a combination of Pure Tone Average, Speech Reception and Awareness thresholds, and when deemed necessary, evaluations of communication function and social handicap. It must be clearly stated that

inclusion of measures other than Pure Tone Averages was left entirely to the professional judgment of the hearing-aid practitioners whenever handicap did not appear to be adequately reflected in the audiometric measures.

Combinations of Pure Tone AC and BC thresholds as well as Speech Reception and Speech Awareness thresholds were averaged to classify subjects into subgroups, and information from the questionnaires was considered only if functional handicap was observed as being greater than the average of these thresholds indicated. In no case, however, did these considerations actually alter the ratings because of the generous decibel range for each subgroup. Summary ratings ranged as follows: Mild, 40 to 55 dB loss; Moderate, 55 to 70 dB loss; Severe, 70 to 90 dB loss; and Profound, over 90 dB loss. A list of instruments used in the rating procedure by the hearing-aid practitioners is located in the Appendix (p.72).

The summary ratings were devised by the author in consultation with the hearing-aid practitioners, but the actual rating was done by the practitioners with the understanding that variation might exist for which no explanation was possible. Vernon and Ottinger (1980) suggest that tinnitus sufferers, those with vestibular disorders, and even those with chronic illnesses or other handicapping conditions might exhibit quite different psychological characteristics than those suffering only a functional hearing loss, but it was impossible to consider these factors in the present study.

3.4.2.1 Degree of Hearing Loss as an Interrelated Variable

The rationale for including the severity of hearing loss in the analysis of possible correlations was based on Alpiner (1982) who suggested that "the ability to understand speech is the primary ingredient in determining an

individual's psychological reaction to hearing impairment" (P. 38). Since the focus of this study was the impact of short-term aural rehabilitation, which included personal amplification, on individual self-esteem, the extent of auditory failure was seen as an important variable to be investigated.

3.4.3 Demographic Instruments

Data related to demographic variables were collected by means of a self-administered Personal Data Sheet and Treatment Questionnaire designed by the reasearcher. The Personal Data Sheet was given to all participants at the time of their hearing-aid fittings, and the Treatment Questionnaire was given to the participants in Groups A1 and A2 upon completing the short-term aural rehabilitation program (Examples of the Personal Data Sheet and Treatment Questionnaire are located in the Appendix (p.66-71).

The Personal Data Sheet consisted of five questions with multi-response items designed to tap information on: sex, age, educational level, career choice and employment status. The Treatment Questionnaire consisted of 19 questions with multi-response items designed to establish the participants' motivation to wear their hearing-aids.

The Personal Data Sheet and the Treatment Questionnaire were pretested with members of the Edmonton Hard of Hearing Association for Adults. The responses of these people did not indicate any confusing items or unclear instructions.

3.4.3.1 Age as an Interrelated Variable

Hearing impairment is generally accepted as a fact of aging. The general population assumes that age alone can account for degenerative

activity of the auditory system. However, the wide-spread psychological problems that this type of impairment can induce are often forgotten. Hull (1977) states that:

> All of us are aware to some degree that the ability to communicate is an important aspect of daily living. If, as part of aging, that ability declines, its impact on our social and emotional well-being can be overwhelming (p. 8).

The age distribution of the participants ranged from 18 to 77 years, and reflected the fact that the incidence of hearing loss increases with age (Harless & McConnell, 1979). Only 13% of the participants were "under 35" while the "over 65" category contained more than 53% of the participants. For this reason age was considered a variable which needed to be scrutinized in this study.

3.4.3.2 Employment as an Interrelated Variable

Stein, Mindel, and Jabaley (1981) have stated that "hearing impaired people see themselves as devalued members of a work-oriented society (p. 218), and Thomas (1984) concluded that "hearing impaired respondents were more prone to worry about their work and were less happy and satisfied at their jobs than their hearing counterparts, indicating that work is likely to prove a source of stress for hearing impaired people" (pp. 89-90). Thus Garstecki's (1984) conclusion, that self-worth is often determined by the prestige and success of employment, illustrates the importance of this variable.

Among the 60 participants in this study, age was reflected in their employment status. Sixty percent of the sample reported they were retired and for the remaining 40%, the majority held either full or part-time jobs. A possible relationship between employment status and self-esteem was seen as worthy of examination.

3.4.3.3 Motivation for Hearing-Aid Use as an Interrelated Variable

The literature supports the notion that effective hearing-aid use is the major component of any comprehensive aural rehabilitation program. That effective hearing-aid use is related to the actual time the hearing-aids are used, is also well corroborated (Alpiner, 1982; Brooks & Johnson, 1981; Chermak, 1981; Jerger, 1984). The assumption underlying this premise is that adults who are motivated to seek help for their hearing problems are willing to assume responsibility for their own enhancement of communication efficiency (Giolas, 1982).

The types of situations in which hearing-aids are used increases correspondingly with the number of hours they are used each day, and this motivation was seen as having a possible effect on self-esteem increments following treatment.

3.5 Procedure for Data Collection

In brief, the data on self-esteem were obtained through the self-administration of the Culture-Free SEI by Battle (Battle, 1981). The demographic data of age, employment and motivation were collected by the Personal Data Sheet and Treatment Questionnaire, and the information on hearing loss was obtained through the audiological records of the hearing-aid practitioners.

The first 40 participants who attended the hearing-aid clinic during Period 1 (July 7 to October 31, 1986), and who agreed to participate in the study were given an envelope which contained the Personal Data Sheet. Every second envelope also contained the self-esteem pretest. Thus, the 20 participants who completed the Personal Data Sheet and the self-esteem

pretest were designated as Group A1. The other 20 participants, who only completed the Personal Data Sheet during this period, were designated as Group A2. Following the short-term aural rehabilitation program all 40 participants in Group A1 and A2 completed the self-esteem posttest and the Treatment Questionnaire. The treatment period for each participant covered a minimum of 30 days , but due to their personal schedules and voluntary participation, the treatment period for 17 of the 40 participants, extended beyond the designated 30 days. Implications for the extended treatment period will be discussed in Chapter 5, but it is sufficient to say that the extended treatment period was not considered serious enough to invalidate the study.

The data for Group B were collected from the next 20 people who attended the hearing-aid clinic and agreed to participate (Period 2, November 2 to December 23, 1986). These participants completed both the Personal Data Sheet and the self-esteem pretest, and no further contact was maintained with this group.

3.6 Assumptions

The following assumptions were considered relevant to this investigation: (a) The randomization procedures used in recruiting the participants and assigning them to groups assured statistical equivalence among the three groups, (b) there were no signficant differences in the treatment conditions, (c) the subjects were capable and honest in reporting their feelings and experiences on the self-esteem instrument, and (d) the instrument met acceptable standards of reliability and validity.

3.7 Summary

This chapter has looked at the following components of the study: (a) the method, (b) the participants, (c) the research design, (d) the measurement instruments, (e) the procedure for collection of data, and (f) the assumptions that were made in order to carry out the study.

CHAPTER 4

RESULTS

4.1 Introduction

The first consideration of this chapter will be the relationship between hearing loss and self-esteem. Next the comparability of the three groups will be examined by assessing differences in the demographic variables of degree of hearing loss, age, and employment status. The final consideration will be the effectiveness of the short-term aural rehabilitation program to improve self-esteem.

4.2 Relationship Between Self-Esteem and Hearing Loss

The relationship of self-esteem and degree of hearing loss will be considered first, since significant psychological reactions to hearing loss acquired in adult years have been reported (Binnie, 1976; Brooks & Johnson, 1981; Frankel, 1981; Giolas, 1982; Jerger, 1984). It is necessary to question this relationship because follow-up questions about the effectiveness of treatment hinge on the fact that hearing impairment has an undesirable relationship with self-esteem.

As shown in Table 1 the results of this present study agree with the findings of other studies reported in the literature--that scores of self-esteem decrease with increased severity of hearing loss.

Table 1

Pre-Treatment Mean Scores for Self-Esteem by Degree of Hearing Loss

Self-Esteem	Degree of Hearing Loss (N=40)		
	Mild N=14	Moderate N = 19	Severe N = 7
General	12.7	11.9	9.9
SD	2.1	2.5	3.3
Social	6.8	6.3	4.9
SD	1.3	1.2	1.6
Personal	6.0	4.9	2.7
SD	1.4	1.9	2.1
Total	25.5	23.3	17.4
SD	3.1	4.2	6.0

The relationship between degree of hearing loss and pre-treatment self-esteem was examined by performing a one-way between subjects analysis of variance with 40 subjects in Groups A1 and B. The relationship was significant for Total self-esteem ($E(2,38)=8.56$, $p<.05$), and posthoc Tukey tests of significance revealed that self-esteem in subjects with severe hearing loss differed significantly from subjects with mild or moderate losses. Although they were not large, the greatest differences in self-esteem were found in the subjects with the greatest hearing loss. The total self-esteem norm for the SEI

is 24.2 (Battle, 1981, p. 66) so the means for the subjects with mild or moderate hearing losses were very close to the norm and this factor may have influenced the results.

4.3 Comparability of the Three Groups on Degree of Hearing Loss, Age, Employment Status, and Extent of Hearing-Aid Use

To test whether the three groups were comparable on the variables of degree of hearing loss, age, and employment status, chi square tests of independence were performed. None of the tests were found to be significantly different. Thus, Groups A1, A2 and B could be considered equivalent on these three variables. Distribution of subjects on the variables of degree of hearing loss, age, and employment status are presented in Table 3.

Table 2

Distribution of Subjects on the Variables of Degree of Hearing Loss, Age and Employment Status

	Group A1 Pretest/Posttest n=20	Group A2 Posttest Only n=20	Group B Pretest Only n=20
Degree of Hearing Loss			
Mild	5	8	9
Moderate	11	7	8
Severe	4	5	3
Age			
Under 35	4	2	2
35-65	6	5	9
Over 65	10	13	9
Employment Status			
Unemployed	0*	1	2
Part-time	0*	0*	3
Full-time	8	5	5
**Retired	12	14	10

*Empty cells may have affected results.

**Age is reflected in the results and it is impossible to determine whether effects are due to employment status or age.

4.4 Results of Short-Term Aural Rehabilitation Program

As stated in Chapter 3, three comparisons were made to determine whether the short-term aural rehabilitation program was having an effect.

Comparison 1. Was Group A1's posttest self-esteem mean significantly higher than their pretest mean? (0_3 versus 0_1)

Comparison 2. Was there a significant difference between Group A1's pretest self-esteem mean and Group A2's posttest self-esteem mean? (0_2 versus 0_1)

Comparison 3. Was there a significant difference between Group B's pretest self-esteem mean and Group A2's posttest self-esteem mean? (0_3 versus 0_4)

Table 4 contains the self-esteem means and standard deviations from which the comparisons were made.

Table 3

Mean and Standard Deviation of Self-Esteem Scores for Groups A1, A2, and B

	Comparison 2			
	Comparison 1		Comparison 3	
	Group A1	Group A1	Group A2	Group B
Self-Esteem	Pretest 0_1	Posttest 0_2	Posttest 0_3	Pretest 0_4
General				
Mean	11.50	12.95	12.20	12.20
SD	2.86	2.63	1.55	2.51
Social				
Mean	6.05	6.45	6.10	6.40
SD	1.36	1.64	1.29	1.54
Personal				
Mean	4.95	5.95	5.85	4.85
SD	2.10	2.14	1.66	2.08
Total				
Mean	22.50	25.40	24.15	23.55
SD	5.04	5.38	4.60	4.99

For Comparison 1, t-tests for correlated groups were repeated for each of the four measures of self-esteem. The difference between the means was statistically significant for general, personal and total self-esteem measures $t(20)=-2.87, -3.68, -4.34, p<.01$. The negative values indicated that the posstest scores were higher than the pretest scores. The result for the pretest-

-posttest, social self-esteem subscale was not significant, but the mean difference was in the expected direction. Table 5 contains the results of the correlated t-tests for pretest-posttest scores.

Table 4

Results of Correlated t-tests

-Differences Between the Pretest and Posttest Self-Esteem Means of Group A1

(N = 20)

Self-Esteem	Pretest Mean	Posttest Mean	Difference	t-value	2 Tail Probability
General	11.50	12.95	-1.45	-2.87	$<.01$
Social	6.05	6.45	-0.40	-1.4	NS
Personal	4.95	5.95	-1.00	3.67	$<.01$
Total	22.50	25.40	-2.90	-4.34	$<.01$

Comparison 2 was concerned with whether similar increments could be noted between Group A1 pretest and Group A2 posttest means. The independent groups t-test revealed no significant differences. Comparison 3 was similarly concerned with whether there were significant differences between Group B's pretest and Group A2's posttest scores. The independent groups t-test again indicated no significant differences. Table 6 contains the results of the independent groups t-tests for comparisons 2 and 3.

Table 5

Results of Independent Groups t-tests-

-Group A1 Pretest/Group A2 Posttest and Group B Pretest/Group A2 Posttest

(N = 40)

Self-Esteem	Group A1 (Pretest)	(Group A2) (Posttest)	t-Value	2 Tail Probability
General	11.50	12.20	-0.82	NS
Social	6.05	6.10	-0.12	NS
Personal	4.95	5.85	-1.51	NS
Total	22.50	24.15	-1.08	NS
	Group B (Pretest)	Group A2 (Posttest)	t-Value	2 Tail Probability
General	12.20	12.20	0.00	NS
Social	6.40	6.10	0.68	NS
Personal	4.85	5.85	-0.68	NS
Total	23.55	24.15	-0.40	NS

Although a trend toward the same pattern of self-esteem increments as seen in Comparison 1 could be noted in the results of comparisons 2 and 3, the differences were not great enough to reach significance.

In addition to the three comparisons designed to demonstrate the treatment effect, two additional comparisons were made to consider the possibility of pretest sensitization effects and group equivalence. Thus, the following comparisons were made.

Additional Comparison 1. Was there a significant difference between Group A1 and A2's posttest self-esteem scores? (0_2 versus 0_3)

Additional Comparison 2. Was there a significant difference between Group A1 and B's pretest self-esteem scores? (0_1 versus 0_4)

t-tests for independent groups were used for the four self-esteem measures in each of the additional comparisons--no significant differences were found--a finding which helps clarify the issue of the observed difference in Group A1 possibly being the result of the treatment. Table 6 contains the results of these additional comparisons.

Table 6

Results of Independent Groups t-tests-

-Group A1 Posttest/Group A2 Posstest and Group A1 Pretest/Group B Pretest

(N = 40)

Self-Esteem	Group A1 (Posttest)	Group A2 (Posttest)	t-Value	2 Tail Probability
General	12.95	12.20	0.92	NS
Social	6.45	6.10	0.75	NS
Personal	5.95	5.85	0.17	NS
Total	25.40	24.15	0.79	NS
	Group A1 (Pretest)	Group B (Pretest)	t-Value	2 Tail Probability
General	11.50	12.20	-0.82	NS
Social	6.05	6.40	-0.76	NS
Personal	4.95	4.85	0.15	NS
Total	22.50	23.55	-0.66	NS

Since no significant differences were noted in Additional Comparison 1, it can be assumed that pretest sensitization probably had no effect on the means. Similarily, the lack of significance in Additional Comparison 2 implies that the two pretest groups were statistically equivalent prior to treatment.

4.5 Summary

In this chapter the results of the study were presented. The first consideration was the relationship between self-esteem and degree of hearing loss. Then the comparability of the three groups of participants with regards to degree of hearing loss, age, employment status, and hearing-aid use was considered. Finally, the effects of the short-term aural rehabilitation program were presented.

Although significant increments in self-esteem means were found between the pretest and posttest in Group A1, and a similar trend could be noted when comparing the means of 40 pooled pretest and posttest subjects, the differences in the latter comparison failed to reach significance. At the same time, safeguarding against the effects of pretest sensitization seemed to be effective because no significant differences were noted in the posttest means. Also, it appeared that the two pretest groups were statistically comparable prior to treatment because differences in self-esteem means were not significant. As to the comparability of participants with regards to demographic variables, distributions indicated acceptable homogeneity among the groups.

CHAPTER 5

DISCUSSION

5.1 Introduction

This chapter will first examine the findings on the effects of acquired hearing loss and other variables interrelated with self-esteem. Following that discussion, the findings about the effectiveness of the short-term aural rehabilitation program will be highlighted. The final segments of this chapter will involve a discussion of the study's limitations and suggestions for further research.

5.2 Relationship Between Self-Esteem-- Degree of Hearing Loss, Age, Employment Status, and Hearing-Aid Use

This segment of the study focussed on the effect of the variables of degree of hearing loss, age, employment status, and hearing-aid use, which the research literature indentified as having a relationship with the level of self-esteem.

In this study prior to treatment, those subjects with severe hearing losses were found to have lower self-esteem than subjects with mild or moderate losses. Thus, the results of this study support the findings of several earlier studies (Giolas,1982; Orlans, 1985; Sanders,1982; Thomas,1984).

Between Groups and Within Groups Analysis of Variance indicated that the other variables of age, employment status and hearing-aid use, which the literature suggested may be interrelated with self-esteem in adults with acquired hearing losses, did not have a significant correlation with self-esteem in this study. However, there are several possibilities which may account for not finding a significant relationship: (a) The small number of subjects in each

group, (b) the statistical tests for independent groups are not as powerful as the correlated groups tests, and (c) homogeneity of the groups on a large number of other variables was beyond the scope of this study.

5.3 Results of Short-Term Aural Rehabilitation on Self-Esteem

For the participants in Group A1 who completed the Culture-Free SEI prior to and at the completion of the short-term aural rehabilitation program, their scores on the General, Personal and Total scales showed significant increases. Only the social self-esteem subscale failed to reach significance.

The other comparisons, using the posttest and pretest scores of Groups A2 and B with the scores from Goup A1 did not reach significance although the trends were similar to those in the 0_2 versus 0_1 comparison. Had these additional comparisons been significant they would have added credibility to the significant findings of change in Group A1's scores as a possible result of the treatment. As mentioned before, the lack of significant differences may in part reflect the reduced power of statistical tests for independent groups and/or the small number of participants in each group.

In support of Group A1's improved scores in self-esteem resulting from the short-term aural rehabilitation, the equivalency of groups and the pretest sensitization comparisons can be seen as supporting the effectiveness of the program. The equivalency of the groups adds greater certainty to the belief that the changes in self-esteem might have been the result of the rehabilitation program and not the result of differences in the groups. Likewise the ruling out of pretest sensitization further increases the likelihood that the observed changes may have been due to the rehabilitation program and not an artifact of having completed the self-esteem instrument at an earlier time.

In summary, the findings suggest that the short-term aural rehabilitation program which included hearing-aid use, appeared to have had a positive effect on self-esteem, but because additional comparisons failed to support this finding, such a conclusion cannot be drawn with confidence. It is possible that a rearrangement of the numbers of subjects in each group would have demonstrated more conclusive results by strengthening the likelihood that increments in self-esteem measures occurred as a result of treatment rather than as an effect of testing, pretest sensitization or a lack of equivalence in the groups. However, the findings in this study seem to be in general agreement with Sanders (1982), who concluded that aural rehabilitation procedures, highlighted by personal amplification, are justified in addressing the personal needs of hearing impaired individuals. Further, the significant increases in self-esteem after a short-term aural rehabilitation program of 30 days by the participants in Group A1 appear to support Sander's premise that effective hearing-aid use can be a positive and rewarding experience for hearing impaired individuals.

5.4 Limitations of the Study

The study is limited by the instruments because the accuracy of self-reporting is dependent upon the individuals' level of self-awareness and willingness to be honest. Further, there is also no way of determining the degree of intensity that each item has for each individual since the self-esteem inventory utilizes a dichotomous "yes" or "no", rather than a scaled reponse. The information thus gathered represents attitudes, personal values, feelings, and ideas which are different for each individual, and as Mischel (1977) points out, subject to change with messages received.

There were also two additional issues which had an effect on the study--five lost cases, and the difficulty in keeping the short-term rehabilitation period constant for all participants.

The lost cases or participants who dropped out of the treatment program may have introduced a bias with regard to the characteristics of the participants on any of the interrelated variables--age, hearing loss, employment status, or motivation. However, the assessment of this possibility was not feasible. Perhaps a larger scale study might be able to identify characteristics in the participants which could make them more likely to be poorly motivated to wear hearing aids and participate in aural rehabilitation programs, but this would require a different research design.

Returning to the problem of keeping the treatment period constant for all the participants, it should be emphasized that for the majority of the participants the treatment program was close to the 30-day period identified as the trial period. However, there were several cases where the time between the pretest and posttest exceeded the 30 days and in one case the time period was as large as 62 days. Although this represents a doubling of the regular treatment period, it is unlikely that any of the participants who exceeded the required 30 days, actually gained additional aural rehabilitation from the hearing-aid practitioner.

5.5 Suggestions for Further Research

The results of this study reinforce the need for more appropriate and valid instruments for measuring self-esteem. These instruments should be designed so that their complexity and length do not prohibit their use in studies where voluntary participation of subjects must be relied upon. It must be noted

that all existing instruments are designed to facilitate psychological treatment of negative self-esteem. What is needed is an insrument that will reflect the effects of the treatment for hearing loss on self-esteem measures.

A replication of this study might be conducted using a larger and more representative sample as well as a longer treatment period which would give subjects an opportunity to become more sophisticated hearing-aid users, and allow for repeated tests at later intervals. Such a replication might clarify whether differences in pretest-posttest results among independent groups is peculiar only to the sample selected for this study or whether there are broader implications for treatment effects on self-esteem. Since it appears that the most significant effects on self-esteem occur in those with the greatest degree of hearing loss, it might be more feasible to study this group in isolation once these subjects have been identified in a replication of this study.

Further studies might also focus more specifically on the possible effects of a variety of other demographic variables such as education, career choice, gender, marital and socio-economic status and their relationships to self-esteem and hearing loss. In this regard, Walden, Demorest, and Hepler (1984) suggested that "more molecular inferred variables may have greater research utility" (p. 320). Implicit in this statement is the need to develop instruments with more suitable construct validity which simultaneously afford an analysis of the requirements of specific situations.

Case studies or longitudinal investigations might produce more accurate information than experimental or quasi- experimental studies about the long-term effects of aural rehabilitation in response to the concerns regarding adult hearing impairment and self-esteem. Families and significant others in the

lives of hearing impaired individuals might also provide useful information. A better understanding of acquired hearing loss should emerge if individual problems and rehabilitative procedures are documented in greater detail.

5.6 Conclusions

Statistical analysis indicated that the greater the degree of hearing loss, the more negative are its effects on self-esteem. This finding supports the findings of a number of other researchers (Giolas, 1982; Orlans, 1985; Sanders, 1982; Thomas, 1984).

Despite the limitations of the study the analysis revealed a significant increase in self-esteem after a limited treatment period for 20 participants, which supports Thomas's (1984) statement that "subsequent evaluations of the extent to which rehabilitative objectives have been achieved indicated gain" (p.166).

Although this study has made only a small contribution to the understanding of the relationship between self-esteem, hearing loss, and short-term aural rehabilitation procedures, it is hoped that future investigations will more clearly unravel the complexitiies and interrelationships of these variables so that the implications may be better understood and appreciated.

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APPENDIX

Letter--Agreement to Participate

Letter--Information Follow-up

Culture-Free SEI, Form AD

Personal Data Sheet

Treatment Questionnaire

List of instruments used in Rating Procedure by Hearing-Aid Practitioners

Thibodeau's

HEARING AID CENTRE

Affiliations:
Alberta Hearing Aid Audiologist Association
National Hearing Aid Society

Dear Sir or Madam:

This letter is to inform you about a research project in which we are co-operating with the University of Alberta, and to ask you to consider becoming a participant in the study.

Using questionnaires to collect data, the researcher will be investigating some of the possible effects of a hearing loss on adult persons, and will try to determine what influence, if any, our fitting and counselling procedures might have on those effects during the 30-day trial period of hearing-aid use.

Please think about it, and if you decide to become involved, your willingness to do so can be indicated by signing the statement at the bottom of this page. When you come back for your hearing-aid fitting, you will be asked to fill in some forms related to the inquiry.

Your involvement in the research project will be greatly appreciated and it is hoped that the results of the study will be a useful contribution to the existing body of knowledge about the effects of acquired hearing loss and implications for treatment.

Sincerely yours,

John Roberts
President

Agreement to Participate:

I would like to be involved in the research project described in the letter above.

_____
(Signature of Participant)

Eligibility to participate;

Have you had any previous experience with hearing-aid use? _____

10989 - 124 St., Edmonton, Alberta T5M 0H8 Phone (403) 451-4718 Telex 03742712

A Division of Thibodeau Holdings Ltd.

University of Alberta
Edmonton
Canada T6G 2G5

Department of Educational Psychology
Faculty of Education
6-102 Education North, Telephone (403) 432-5245

July 21, 1986

Dear Sir or Madam:

During your first visit to Thibodeau's Hearing-Aid Centre, you signed an agreement to participate in a study, approved by the University of Alberta, which will investigate the effects of acquired hearing loss and subsequent hearing aid use on adult persons. The research is part of the requirement for a Master's thesis in educational psychology, and I am grateful for your willingness to become involved in this project.

You are being randomly assigned to one of three groups being studied, and will be asked to complete certain questionnaires today, and again at the end of your 30-day trial period of hearing-aid use. Should you happen to be assigned to Group III, you will be given only one set of questionnaires to be completed today. The completed forms should be replaced in the numbered envelope, and I will collect them from the receptionist.

If you would be willing to share your experiences related to your hearing loss in a personal interview, please check the appropriate response below, and I will try to arrange to see you at your convenience.

All data will be treated confidentially, and if you have any questions about the research, I shall be pleased to answer them. You may also feel free to contact my thesis advisor, Mary Ann Bibby, at 432-5213, University of Alberta. Your interest and co-operation are greatly appreciated.

Yours sincerely,

Interview:

Yes _____

No _____

Hilda M. Campbell (Researcher)
Telephone: 436-0780 (TDD)
451-6366 (MRC)
or 435-4034 (Anthea Lee - research ass't)

BLANK PAGE INSERTED HERE

Group # _____
Subject # _____

PERSONAL DATA SHEET

Please remember to answer all questions

Check the appropriate answer for each of the following questions:	Please do not use this space
I. What is your sex? ____ 1. male ____ 2. female	
II. How old are you? ____ 1. under 35 ____ 2. between 35 and 65 ____ 3. over 65	
III. What kind of education do you have? ____ 1. now at school full time ____ 2. now at college or university full time ____ 3. completed junior high school ____ 4. completed senior high school ____ 5. completed apprenticeship training ____ 6. completed college or technical school ____ 7. university graduate	
IV. What is/was your chosen career? ____ 1. homemaker ____ 2. trade or service ____ 3. clerical or office ____ 4. managerial ____ 5. professional ____ 6. still undecided ____ 7. other (_____)	
V. What is your present career status? ____ 1. part or full-time student ____ 2. unemployed at present ____ 3. employed part time ____ 4. employed full time ____ 5. retired	

Group #____ ___
Subject #_____

TREATMENT QUESTIONNAIRE

Date: _____

Will you be continuing to use your hearing-aid?_____
(yes or no)

Check the appropriate answer(s) for each of the following questions:	Please do not use this space
I. For how many hours per day have you been using your hearing-aid? ____ 1. less than 2 hours per day ____ 2. about 2 hours per day ____ 3. about 4 hours per day ____ 4. about 8 hours per day ____ 5. about 12 hours per day	
II. For which of the following activities have you been using your hearing-aid(s)? (Check more than one if applicable). ____ 1. on the job (if employed) ____ 2. while working around the house, yard, garden ____ 3. while watching TV ____ 4. while attending meetings, lectures, church services ____ 5. while attending large social gatherings ____ 6. while attending small family gatherings ____ 7. while shopping, banking, paying bills, etc. ____ 8. while driving a car, riding in a car as a passenger, or while using public transport ____ 9. while using the telephone ____ 10. while attending theatre, concerts, opera ____ 11. while participating in sports or games, either actively or spectatively ____ 12. while alone ____ 13. in one-to-one conversations	
III. Have you had any problems with your hearing-aid(s)? ____ 1. yes ____ 2. no If yes, please explain: _____ _____	

Group #_____
Subject #__ ____

	Please do not use this space
IV. Have you had any problems with your earmold(s)? ____ 1. yes ____ 2. no If yes, please explain: _____ _____	
V. Since your fitting, how many times have you contacted your hearing-aid practitioner? ____ 1. no contact ____ 2. once ____ 3. twice ____ 4. three times ____ 5. four or more times	
VI. If you've had no contact with your hearing-aid practitioner, what is the reason? (Check more than one if applicable) ____ 1. I've had no problems ____ 2. I've been too busy with other responsibilities ____ 3. I've been out of town ____ 4. I doubt my hearing can be further improved. ____ 5. I don't feel I can fairly assess the hearing-aid(s) until the trial period ends ____ 6. I'm confident that a hearing-aid isn't the answer to my problem. ____ 7. There was nobody to bring me.	
VII. Has (Have) your hearing-aid(s) bothered you in any of the following situations? (Check more than one if applicable) ____ 1. in large social gatherings ____ 2. at meetings, lectures, church services ____ 3. at small family gatherings ____ 4. while driving or using public transport ____ 5. while using the telephone ____ 6. at work ____ 7. with children ____ 8. with public address systems ____ 9. other (please explain)_____ _____	

Group #_____
Subject #___ __

	Please do not use this space
VIII. Were you fitted with one hearing-aid or two? ___ 1. one aid ___ 2. two aids	
IX. Were you given adequate instruction about the use and care of your aid(s)? ___ 1. yes ___ 2. no	
X. Since your initial contact with your hearing-aid practitioner, have you changed your opinion about hearing-aids in any way? ___ 1. I had a negative opinion and it hasn't changed ___ 2. I have become a little more positive ___ 3. I have become much more positive ___ 4. I had a positive opinion, and it remains the same ___ 5. I find my aid(s) better than I had expected	
XI. Do you think your family members need more information about hearing loss in general? ___ 1. yes ___ 2. no	
XII. Do your family members need more information about hearing-aids? ___ 1. yes ___ 2. no	
XIII. How do you feel about your own knowledge of hearing loss in general? ___ 1. not adequately informed and want more information ___ 2. want no further information ___ 3. reasonably well informed, but would like more information ___ 4. well informed, but I intend to keep up with current literature in this field.	

Group # _____
Subject # ___ ___

	Please do not use this space
XIV. Which of the following describe(s) your experience during the 30-day trial period? (Check more than one if applicable) ____ 1. I stayed with it mainly to satisfy my family members/husband/wife ____ 2. It was a total waste of my time ____ 3. It was too frustrating to be of any real help ____ 4. It was frustrating at first, but helpful ____ 5. It was helpful and informative ____ 6. It was a much more positive experience than I had expected ____ 7. It changed my expectations dramatically. ____ 8. It was one of the best decisions I've ever made ____ 9. I wish I had done this years ago.	
XV. How has your confidence in social situations been affected by using(a) hearing aid(s)? ____ 1. my confidence has decreased ____ 2. my confidence didn't change at all ____ 3. my confidence has increased slightly ____ 4. my confidence has increased significantly ____ 5. I now feel totally confident in all social situations	
XVI. If group counseling sessions for hearing impaired adults were readily available to you, would you take advantage of such a program? ____ 1. no, I don't feel I need more counseling ____ 2. possibly, if it were convenient ____ 3. yes, I definitely think I would benefit from counseling and discussion	
XVII. If speech reading (lip reading) classes were readily available to you, would you take advantage of such a program? ____ 1. definitely not ____ 2. possibly ____ 3. most likely ____ 4. very definitely	

Group # ____
Subject # ____

	Please do not use this space
XIX. It is important for the purposes of this research to determine if you have experienced any significant events unrelated to your hearing loss during the 30-day trial period. These may be either positive or negative events which affected you either directly or indirectly through significant others in your life. Please check any of the following which might be applicable. ____ 1. no significant events out of the ordinary have occurred ____ 2. a negative event related to employment has occurred (example, strike, layoffs, etc.) ____ 3. a negative family event has occurred (example: accident, illness, etc.) ____ 4. a positive event related to employment has occurred (example: promotion, raise, etc.) ____ 5. a positive family event has occurred (example: birth of a grandchild, marriage, etc.) ____ 6. other (please specify) _____	
XX. Are there any other comments you would like to make about your experiences during the 30-day trial period of hearing-aid use? _____ _____ _____ _____ _____ _____ _____ _____ _____ _____	

List of Instruments used in Rating Procedure by Hearing-Aid Practitioners

1. Case history questionnaire.
2. Representation of better ear pure-tone average.
3. Representation of combined AC/BC thresholds to check for ostosclerosis, noise-induced loss, eustachian tube dysfunction, etc., including referral forms to appropriate medical practitioners.
4. Phonetically balanced word lists (C.I.D. W-22).
5. Compound word lists, used with Hal-Hen Auditory Test tape.
6. Assessment of functional hearing handicap, developed for Alberta Hearing-Aid Audiologist Association (includes 13 questions with dichotomous response options).
7. Activity Index (Ambient Level), includes 23 questions in four categories, with rated responses 1 to 7, developed for Alberta Hearing-Aid Audiologist Association.
8. Representation of Impedance Results (MC Systems Inc., Northbrook, IL.).
9. Representation of Otometric Prescription (G.A. Levow Network, West Newton, MA).